

# KEUFFEL & ESSER CO.

DRAWING MATERIALS

AND

SURVEYING INSTRUMENTS.

NEW YORK.

CHICAGO. SAN FRANCISCO. ST. LOUIS.

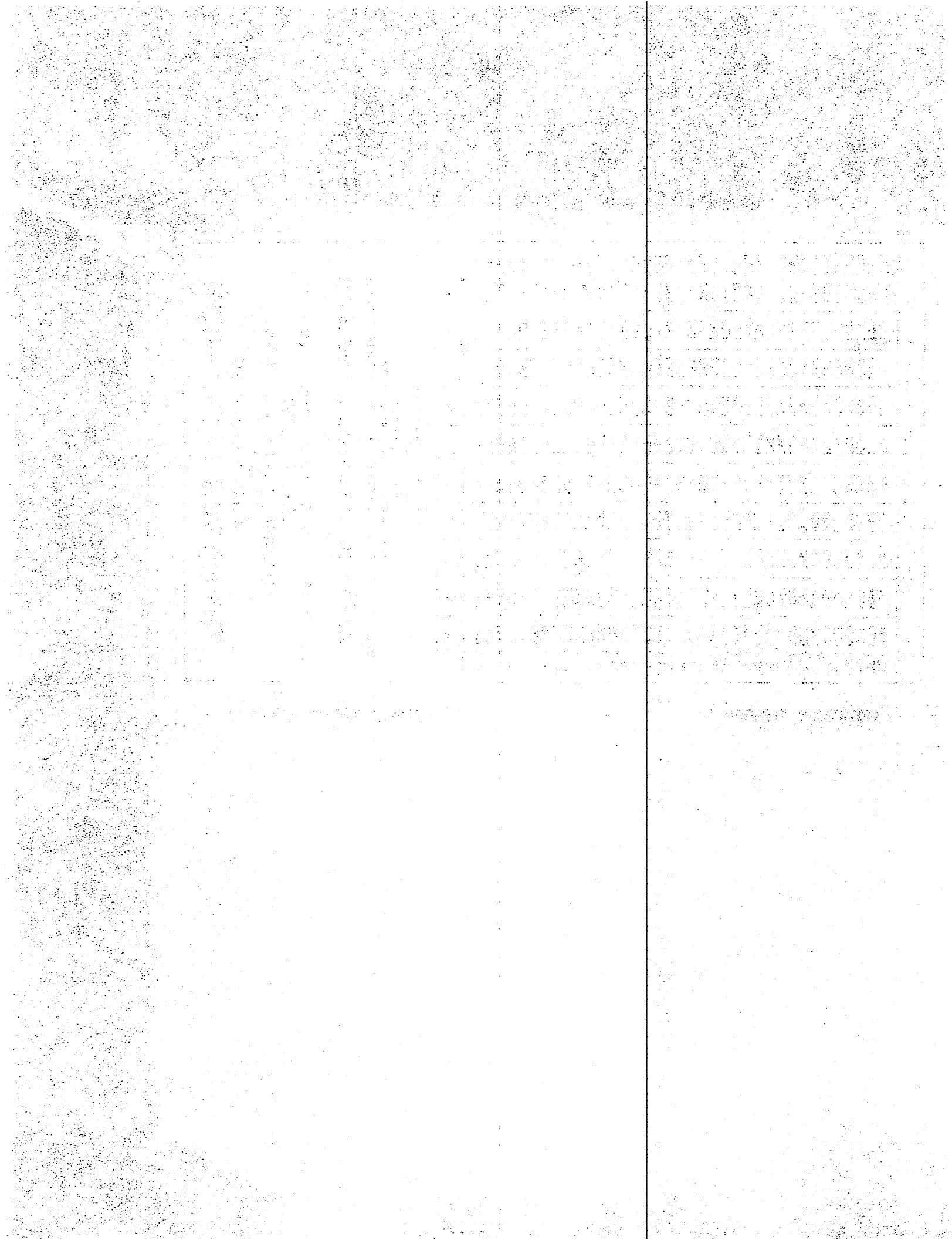
## TABLES FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING,  
ROADWAY 18 FEET WIDE. SIDE SLOPES 1 TO 1.

For Single Track Excavation

"Copyright, 1895, by Keuffel & Esser Co."

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9
0	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9
1	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9
2	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9
3	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9
4	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9
5	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9
6	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9
7	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9
8	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9
9	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9
10	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9
11	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9
12	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9
13	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9
14	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9
15	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9
16	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9
17	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9
18	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9
19	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9
20	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9
21	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9
22	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9
23	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9
24	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9
25	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9
26	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9
27	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9
28	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9
29	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9
30	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9
31	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9
32	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9
33	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9
34	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9
35	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9
36	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9



		Elevations of Werk Center line plugs	Jan. 18, 1914.
+5 Sta	+5 P.D.	-5 Sta	-5 E.L.
5503	-190	120.11	62.97
			-3.95
		62.93	-34.1
			123.52
		64.48	-4.23
		65.49	124.34
		66.07	-3.21
			123.32
		66.97 ft. 0 -	P.D. at 66.14
		Sucker pipe	64.42
		4" line to end of P.D.	
		Permanent track laid to	65.52
		Tunnel weight: 1.015 at 8 AM Jan 19/1914. 2000 ft.	
Completion of Williams contract.			
Blast off at	66.97	Total Advance	975 ft.
P.D. "	66.14	(83 ft from B)	
Permit "	65.52	(455 ft from B)	
Sucker pipe "	64.42	(255 ft from B)	
4" Airline "	66.17	(80 ft from B)	
Last ft of Bottom 6" high			
Feb 4, 1914.			
Tunnel rear	$h = 1.19$	Measured by Friendly	30.11
Feb 5 1914 noon	$h = 1.26$		

Completion of Williams cuttings.

Brent last at 6697. Total Advance 975 ft

Dick " 66.14 (83 ft from Bay)

Permittee " 6552 (45 ft from B)

Such a pipe " " 6442 (2.55 ft from B)

4 "Arlene" "6617 (20 ft from B-)

Last 5 ft of bottom 6 " high.

Last 5 ft of bottom 6" high

Feb 4, 1914

$$T_{\text{measured}} = 11.9 \text{ s} \quad \{ \text{measured}$$

19/4 19.00m

$$h = 126$$

1000

## Beginning of Market Turner Co. Content

Brent at 66.9

Dick on 66 14

Sucker pipe at 6602

Term has ex 660+

100

100

100

100

100

100

1000

100

卷之三

	Elevations	Feby. 11, 1914.			
+ S. Sta	+ S. Rod	H.I.	- S. Sta	- S. Rod	- S. El.
123.52	- 2.30	121.22	6549	- 2.13	123.35
6293					116.37
					116.52
					7.31
					7.76
					8.26
Breast at 6790					
Ditch at 6687					
Ties at 6660					
Tunnel rail at 1 P.M. (snow)	6 = 1.27				
Elevations Feby 14, 1914.					
123.52	- 2.14	121.38	6549	- 1.97	123.35
6293					116.37
					7.32
					Tie 7.35
Breast at 6815					
Ditch 6707					
Ties 6680					
Elevations Feby 21, 1914.					
123.35	- 2.22	121.13	6682	- 3.34	124.47
62549					116.70
					7.77
					Temp 79
Track highest point					
Breast 6874			6791	0" higher than rail under plus 6700	
Ditch 6785					
Ties 6695					
sump 6690					

Tunnel wear	End contraction
Wear torn out by H. H. Stoker on Feb 20 1914 and one side removed, giving end contraction on one side only.	Length of wear = 2.53 ft.
Gauge on Feb 21 at 1 P.M. - $h = 1.14$ corrected $h = 1.17$	To measure $h$ , take gauge readings of distance between brass points and
Measurement on Feb 27 at 9 A.M. by Mr. Friend Jr.	Distance between brass points and
$h$ (corrected) = $1.16 - Q = 1.185$ sec. ft.	Subtract 0.02' for the head.
Distance from setting curve shown by H. H. Stoker of U. P. & L. Co.:	
March 2, 1914 - Monthly estimate for Feb.	
Front at 6711. Advance 274 ft.	Distance from Break 141 ft
Dist. broken to 6830. Advance 216 ft.	" 183 ft.
Breast track 6790	" "
Sidewall pipe at 6760	158 ft.
Geology -	
At 6719 Quartzite appears with anomalous dip of $\pm 25^\circ$ to the N.W. and continues for 75 ft. corresponding to a bed approximately 30 ft thick. Narrow beds of lime appear in the quartzite. From 6795 to Breast tunnel it is similar to that driven thru by Williams contracting to - hard lime of good breaking quality. Stands well and requires no timber.	
Numerous fissures and open water courses strike across the tunnel and dip $70^\circ 20' S.E.$ These fissures carried water under heavy pressure when first struck but during the month they have dried up above the ditch level. They are still providing water from below. The breast is off.	
Tunnel min 3/21/14 - 4:30 P.M. $h = 1.12$ $Q = 1.16$ sec. ft.	

End contraction on 1 side only - invariable  
 Length of wear = 2.53 ft.  
 To measure  $h$ , take gauge readings of  
 distance between brass points and  
 subtract 0.02' for the head.

Wet in fair case, top & side removed

1905 25, 194.  
A small colony of the most common Euscorid  
was found in a box of dried soil.

March 26 1914						
- Elevations -						
+S. Sta 124.85 6954	+S. Rod -169	H.I. 123.16	-S. Sta 70.77	-S. Rod -2.25	-S. Elv. 125.41	True Elv. 117.69
			71.64	-2.36	125.52	117.91
			71.57	-1.84	125.00	117.89

Breast at 7183 at 11AM.  
Ditch at 7087  
ties at 7000  
Sucker pipe at 69821  
Tunnel weir at 1:30 P.M. (knowing)  
 $h = 1.09$     $Q = 1072 \text{ sec. ft.}$

April 2, 1914

Breast at 7269 at 4 PM. Advance 298 ft.  
Ditch broken to 7155 - mucked to 7100 - 114 ft from Br.  
Ties to 7092 - 177 ft from Br.  
Sucker pipe at 7087 - 122 ft from Br.

Tunnel weir at 5 PM.  
 $h = 1.04$   
 $Q = 9.94$

Elevations water Greek Creek Ditches

Obs. about tie.	7.72 rail = 7.20
7.61 turnsheet = 7.14	
7.11 screw eye in cap - not to be used unless plug 7164 is knocked out.	
Grade light under 7164 = 2.61 - 41 = 2.20	
Grade light under 7157 = 2.61 - 41 = 1.70	

Breast is in fine grained limestone similar to that out last month.  
Breast is dripping water but there are no heavy flows. At a point 100 ft from Breast a 2" pipe could carry all the water.  
At a 0 7150 large fault fissure strikes N50E dip 65° S.  
Breccia soft lime and required timbering for 124. It is dry and will not cause trouble.

At 0 7065 open water course strike N30E Vert. H. is now dry above ditch level.  
Similar one at 7080, somewhat smaller, taking considerable water from SW. side. Dry above track level.  
At 0 7100 water course (dry) strike N70E Dip 65° N.



April 128, 1914. Elevations						
+5 Sta	+5 Rod	H.I.	-5 Sta	-5 Rod	-5 Elev.	
125.56						
7164	-2.70	122.86	738.2	-2.65	125.51	
			746.3	-2.60	125.46	
Turnsheet 20 ft from Breast				+ 4.15	118.71	
Breast at 7536				Adv. 267		
Ditch at 7422 - 114 ft from B/						
Tunnel Weir $f=1.015$			$Q = 9.55$ sec/ft.			
Lavigne Creek gage = 0.644			rocks in weir - has 20 ft			
Snake Creek weir full of rocks.						

May 2, 1914.  
Breast at 7581 at 9 A.M.  
April 2 = 7269  
Advance - 312 ft.  
Ditch 108 ft from Breast = 7473  
Ties at 7428 = 153 ft from Breast.  
Sucker pipe at 7335  
Tentative weir 11 A.M.  
 $h = 1.018$   $Q = 9.58$

Elevations					
125.56					
71.64	-1.90	123.66	73.82	-1.83	125.49
			74.63 (new) (1919)	1.79	125.45
			75.63	2.14	125.80

Elevations <sup>1111.11</sup> Water Snake Lava and River Ditches  
Greek Creek Creek Measurements

Elevations Water "DRAKE LAVING" Water  
Greek Creek Greek Ditches

May 11, 1914						
Elevations						
+ S Sta	+ S Rod	H.I.	- S Sta	- S Rod	- S Elv	Treelite El.
125.49						
738.2	1.71	123.78	746.3	1.69	125.47	118.66
			756.2 (new) (flng)	2.04	125.82	118.91
			76.50	2.80	126.58	119.12

Breast at 7669.

Tunnel weir at 245 P.M.  $h = 1.04$

May 13, 1914

Breast at 7702 at 7:30 P.M. (Dry)

Sample 5 ft from Breast on contact Grey & Black lime

Black lime impregnated with pyrite. Ore occurs in

Knife blade fissures parallel to the tunnel and in spots in  
the grey lime.

Assay - Pb. 9.9%

Cr 0.2%

Ag 3.40%

As - Trace

Zn 3.3%

Fe 3.1%

SiO<sub>2</sub> 65.4%

May 14, 1914 8 A.M.

Tunnel weir  $h = 1.06$

May 18, 1914

Tunnel weir  $h = 1.01$  (measured by Freckly.)

May 22, 1914						
Elevations						
+S Sta	+S Rod	H.I.	-S Sta	-S Rod	-S.E.I.	Tropic El.
El=125.47			7563	-1.42	125.83	118.91
7463	-1.06	124.41	7650 (high) plus	-2.24	126.65	119.12
			7680	-2.23	126.64	119.20
			7780	-2.60	127.01	119.45

Breast at 7809 - Adv 228

Ditch at 7719 -

Ties & sucker pipe at 7650

Tunnel weir May 21 6 P.M.  $h = 1.03$

May 22 11 A.M.  $h = 1.02$

Lavaena weir  $h=0.909$  (uncorrected) M.

May 27, 1914

Tunnel weir  $h = 1.00$  (measured by Friendly)

June 2 1914

Elevations

Elevations						
El=125.83						
7563	-1.18	124.65	7780	2.40	127.25	119.45
			7919	2.78	127.43	119.80

Br at 7951 Adv 370

Ditch at 7870

Ties at 7830

V Pipe at 7790

Elevations Water Snake Loring Water Creek Creek Measurements Ditches

6.92

7.53 Permanent tie = 7.20

7.44 Temporary rail = 7.40

7.56 " " 7.40

Grade lights =  $2.56 - 30 = 2.26$  (7780)

2.44 - 30 = 2.14 (7680)

2.53 - 30 = 2.13 (7650)

7.60 Farm tie = 7.30

7.63 Temp rail = 7.25

Grade lights  $2.60 - 20 = 2.40$  (7780)

2.63 - 20 = 2.43 (7919)

Grade tie under 7919 =  $7'5\frac{1}{4}$   
(given to Hancock)

Elevations Water snake Laving water Creek Creek Measurements Ditches

		June 10, 1914					
Tunnel	weir	-10.30 AM	$h = 0.99$	$Q = 9.20$			
		- Elevation -					
+5 Sta. EI=125.83 7563	+5 Rod	HT	-5 Sta	-5 Rod	-5 Elev.	True Tie El.	Surveored
		-1.06	124.77	7780	-2.30	127.07	7.62
				7919 <sup>(new)</sup>	-2.83	127.60	7.80
					8037	-2.88	127.65
						120.09	7.56
Breast	at 80.52	Advance 101 in 8 days					
Ditch	at 79.60						
✓ Pipe & Track	7920						
		June 20 1914					
		- Elevation -					
EI=125.83 7563	-0.99	124.84	7919	-2.75	127.59	119.80	
			8040 <sup>(new)</sup>	-2.85	127.69	120.10	7.59 Perm. tie = 7.50 in.
			8171	-3.67	128.51	120.43	8.08 Much on furnished
Breast	at 8186	Advance = 235 in 18 days					
Ditch	at 8095						
Ties	at 8040						
VPipe	at 7990						
A 8000 ft of brass plug cemented into E wall							
2 ft above tie marked 8000. Plugs 8040 & 8171							
measured from 8000 ft plug with 500 ft Lufkin tape.							
Tunnel	weir	$h = 0.97$	1 PM.				

July 1, 1914

Elevations:

7919	-232	125.37	8040	-2.42	127.69	120.70
			8171	3.26	128.58	120.43
			8292	2.90	128.17	120.73

7.59 Tie 1.50

Tie under 8171 = 8.11 OK.

7.44 7.44 on Torn sheet.

Estimate for June.

Measured on July 1<sup>st</sup> Estimated for July 2<sup>nd</sup>

Bread at 8307 July 1<sup>st</sup>

Advance to July 2 - 13

Bread at 8320 July 2<sup>nd</sup>

7951 June 2

Advance 369 ft.

Ditch at 8223

Ties at 8191 } July 2<sup>nd</sup> 1914.

V pipe at 8163

1" line at 8180 (approx)

Bread in plucky gray lime medium sand.

At 90 8225 to 60 8240 - 4 sets of timber.

Formation at this 0 is taken up

						Elevations	Water	Snake River	Water	Creek Measurements	Ditches
128.53		July 16 1914									
+5 sta	+5 rod	Elevations									
		-5 sta	-5 rod	-5 elev.							
8171	3.39	8292	2.92	128.16		120.73					7.42
		8436	3.72	128.96		121.09					7.81
Breast		8453	h								
128.16											
+5 sta	+5 rod	HI	-5 sta	-5 rod	-5 elev.						
8292	174	126.48	8436	-2.53	128.95	121.09					7.86
			8576	-2.56	128.78	121.44					7.54
Breast at 8620			Advance	300							
To check movement in concrete.											
192996	-1.344		2982	-1.420							
			2964	1.432							
Three plugs on line at large crack in concrete.											
Aug 2 1914.											
Elevations											
128.95											
8436	-3.33	125.62	8576	-3.36	128.98	121.44					7.54
			8658	3.33	128.98	121.65					7.30
Breast at 8667			Advance	347 ff.							
Ditch at 8565											
Ties at 8606											
V Pipe at 8460											

40 ft from Breast small fissure  
with 10 feet of tough white sugary material 858 (Tampa 6)  
Breast is in very firm of good standing and during greatest  
small amount of water in Breast.  
No timber down in mouth.

Survel Water readings		Creek water		Creek measurements		Pitches
Date	hr	h	0	mgay		
July 1	9 Am	1.01	9.50	1.04	9.95	
3	10. "	1.00	9.30			
3	9. "	1.02	9.65			
4	10. "	1.01	9.50			
5	12. "	1.03	9.30			
6	8. "	1.01	9.30			
7	9. "	1.02	9.30			
	7	16585	7166.30			
		9.41	9.47			

New measurements gauges are being put in for tunnel and back creek. No readings were taken on back creek or Lava rock creeks during the month will start taking readings in about 3 days  
(signed Taylor)

Elevations Aug 14, 14,						
128.95						
1436	186	127.09	86.58	-189	128.98	121.65

7.33 Permanent tie = 7.30 ft.  
7.24 Temporary rail = 7.35  
410 3797 (6ft N.W. of Plug) shows strikes across tunnel about  
one E & W and dips 27.5° N. Has a filling 1/2 thick of  
blue limestone with black specks which makes it look  
like porphyry. The limestone completely worn down  
M.C.P.

Elevations Water MAKE LAVING Water Creek Creek Measurements Ditches

	Elevations		Aug 20	14.	
128.16	-1.80	126.36	86.58	-2.63	128.99
82.92			87.91	-2.88	129.24
			88.96	-3.25	129.61

Bread at 89.20

Ditch 88.20

Ditch 87.91

Sept 21 1914.

Brass plug marked 9000 placed  $2\frac{1}{2}$  ft above rail in North East wall at a  $\odot$  9000 ft from portal.

Measured from 8000-ft plug with 300 ft left in top.

Bread at 90.86 11 AM.

Aug 21 86.67

$41\frac{1}{2}$  ft advance.

Ditch off 90.05 Back 81 ft from Bread

Sis at 89.61 " 125 " "

V Pipe at 89.11 " 175 " "

Geology - At 89.20 beds highly tilted to north and lime is marlized. Timbed from 89.15 to 89.25 a slight movement in beddings makes ground slough at this point. It is not heavy.

At 89.70 this has been considerably movement in beddings which dips  $10^{\circ}$  N.

From this point the breast ground gradually becomes harder and denser. Breast is highly metamorphosed and extremely hard and dense. In places there are small bodies of igneous intrusions. Contact metamorphic minerals present (not sampled) very little definitely igneous rock as yet.

No water struck this month. Breast dry and dusty.

	Elevations					
128.99	-1.92	127.07	87.91	2.19	129.26	121.98
86.58			88.94	2.55	129.62	122.24
			90.51	-2.63	129.70	122.63

Tunnel width 6 = 0.48

7.28

7.38

7.07

7.44

7.7